

**CALIFORNIA DEPARTMENT OF WATER RESOURCES
OROVILLE FACILITIES RELICENSING (FERC PROJECT NO. 2100)
PUBLIC SCOPING MEETING OF OCTOBER 29, 2001**

*** Comments of Joint Water Districts
and
Western Canal Water District**

**OROVILLE FACILITIES RELICENSING (FERC PROJECT NO. 2100):
PUBLIC SCOPING MEETING OF OCTOBER 29, 2001**

*** Comments of Joint Water Districts and Western Canal Water District**

Ladies and Gentlemen:

I am Robert Fehlman, Manager of the Western Canal Water District appearing with Doak Cotter, Manager of the Joint Water Districts consisting of Richvale Irrigation District, Butte Water District, Biggs-West Gridley Water District and Sutter Extension Water District. The Joint Water Districts are located in Butte and Sutter Counties and Western Canal Water District is located in Western Butte County and Eastern Glenn County. We are appearing before you this evening specifically to request that FERC address our problem which is crop damage resulting from dramatic drops in the temperature of water delivered by DWR in its operations of the Oroville Dam and Reservoir from the Thermalito Afterbay. We ask that FERC address this problem by adopting a license provision requiring DWR to ensure deliveries of irrigation water from Thermalito Afterbay at temperatures suitable for rice propagation and production, specifically at least 65° during the four-week planting period, and at least 59° for maintenance and "tillering" water until the irrigation season is completed; i.e., on or about October 31 each year.

W-08-01

Our request is based upon DWR's obligations under its 1969 Agreement with the Joint Water Districts and its 1985 Agreement with Western Canal Water District as discussed in our letter to DWR Director Thomas Hannigan dated February 1, 2000, which I submit to you now as Exhibit "A-1 through A-24." Exhibit "A" specifically references Paragraph 6 of the 1969 Joint Water Districts - DWR Agreement which states in part as follows:

"This Agreement does not relieve State or its officers, agents or employees from liability to or from damages to Districts or third parties arising out of failure of State at any time to comply with this Agreement or the diversion schedules or notices given by Joint Manager pursuant hereto or from injuries to crops or production of crops due to reduction in temperature of water available to Districts during any portion of any Irrigation Season or seasons *as a result of water released from Lake Oroville being colder than water that would have been available in the Feather River for diversion by Districts if Oroville Dam had not been constructed.* (italics added) Nothing in this Agreement shall be construed as an admission by State that a reduction in the temperature of water available to the Districts will in fact cause injury to crops or production of crops." See **DWR-Joint Board Member Water Districts Agreement of May 27, 1969 at Paragraph 6 on Pages 16 and 17.**

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***Comments of Joint Water Districts and Western Canal Water District**

It is critical that irrigation water delivered pursuant to the 1969 Joint Water District/DWR Agreement and the 1985 Western Canal – P.G. & E. – DWR Water Diversion Agreement being released from the Afterbay into the river at a temperature which does not fall below 64°F during the four-week germination stage and/or planting stage for rice and does not fall below 59°F during the maintenance “tillering” stage for rice (releases under the control of DWR not inclusive of weather). Additionally, at the initial germination or planting stage, it is estimated by the Rice Experiment Station that a combination of ground and water temperature which:

- (1) falls below 50°F will kill the plant;
- (2) falls below 50°F and 55°F will produce very low germination activity causing the plant to damage or die; and
- (3) falls within 55°F to 60°F will cause low yield and seedling production.

During the initial germination stage, the temperature of the top 4-inches of soil inundated with irrigation water is critical. It is not recommended that rice be planted when the combined temperature of water and soil falls below 65°F.

Additionally, please review the brochure produced by Department of Water Resources for the State of California at the time of building Oroville Dam and Reservoir. The brochure fairly supports the reasoning we submitted to you in our letter of February 1, 2000, which is Exhibit “A.” With regard to agricultural production of rice by a number of landowners within our Districts, the brochure report states in part:

“The University of California has demonstrated that rice plants thrive best when the temperature of irrigating waters ranges from 59° to 77°F. Even within this critical range, temperature fluctuation drastically affects the harvest.

With a proper outlet structure at Oroville Dam, the temperature of releases can be controlled so as to serve the agricultural interests of the area.” See Page 11 and Page 12 of “Temperature Control of Water From Oroville Reservoir” produced by the Department of Water Resources in the early 60's.

The foregoing brochure was referenced in our letter to Director Hannigan of March 21, 2000, which is submitted as Exhibit “B-1 through B-17.” In our letter of February 1, 2000, which is Exhibit “A” we state our concerns with the obligatory contractual requirements set forth in our contracts with DWR which are mentioned in

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***Comments of Joint Water Districts and Western Canal Water District**

DWR Representative Jim Spence's letter of September 14, 1999 to Gary Sterns of the National Marine Fisheries Service where Mr. Spence writes:

"As described in the attached comments from the Oroville Field Division to me, assuring substantially colder water conditions in the low-flow channel to a compliance point at "Robinson Riffle" (River Mile 61.6) requires water releases to be colder, or greater, or both. Release of water cold enough to meet the objective will certainly conflict with the 1983 Agreement with California Department of Fish and Game and for "Operation of the Oroville Diversion of the State Water Project for Management of Fish and Wildlife." Such releases of cold water will also conflict with the 1969 water rights settlements with Richvale Irrigation District, Biggs-West Gridley Water District, Butte Water District, and Sutter Extension Water District. Water temperature was an important factor in the design and construction of the Thermalito Afterbay facilities. Operation outside the range of existing written agreements does not seem to me to be a "reasonable measure" involving only minor changes to the project. To some extent, large flow increases in the low-flow channel could substitute for colder initial water temperatures, but would then necessitate varying the flow in contradiction to the second basis objective - stability." See Exhibit "A" at Page 4.

Finally, we ask you to review the eight (8) examples of reduced rice production yields developed during the 1999 irrigation season due to colder water temperatures which examples are set forth @ Exhibit "A-5."

We thank you for opportunity to present our concerns to FERC and again, ask that these concerns be addressed by FERC during the relicensing of the DWR Hyatt Power Plant Facility in Oroville.

ROBERT FEHLMAN, Manager
WESTERN CANAL WATER DISTRICT

DOAK COTTER, Manager
JOINT WATER DISTRICTS BOARD

FEATHER RIVER DIVERTERS

JOINT WATER DISTRICTS

735 Virginia Street
Gridley, California 95948
Telephone: (530) 846-3307

WESTERN CANAL WATER DISTRICT

P.O. Box 190
Richvale, California 95974
Telephone: (530) 342-5083

Representing:

Richvale Irrigation District
Biggs-West Gridley Water District
Butte Water District
Sutter Extension Water District

February 1, 2000

Director Thomas M. Hannigan
State of California
Department of Water Resources
1416 Ninth Street
P.O. Box 942836
Sacramento, CA 94236-0001

Re: DWR Obligations to Deliver Water from Thermalito Afterbay at
Temperatures Suitable for Agriculture

Dear Director Hannigan:

As you know, our office represents the Joint Water Districts and Western Canal Water District on the Feather River System. The Joint Water Districts consist of Richvale Irrigation District, Butte Water District, Biggs-West Gridley Water District and Sutter Extension Water District, located in Butte and Sutter Counties. Western Canal Water District is located in western Butte County and eastern Glenn County.

The districts are concerned about crop damage resulting from dramatic drops in the temperature of water delivered to them by DWR from the Thermalito Afterbay. Prior to the commencement of the 2000 irrigation season (which could occur as early as April), they request assurance that DWR will work to ensure deliveries of irrigation water from Thermalito Afterbay at temperatures suitable for rice propagation and production, specifically at least 65° during the four-week planting period, and at least 59° for maintenance and "tillering" water until the irrigation season is completed, *i.e.*, on or about October 31. That request is based upon DWR's obligations under its 1969 agreement with the Joint Water Districts, and its 1985 agreement with Western Canal Water District, as discussed in more detail below. DWR's May 27, 1969 Agreement with the Joint Water Districts was entered into inter alia to settle the Joint District's

W-08-02

EXHIBIT "A" PG 1 OF 24

To: Director Thomas M. Hannigan
State of California, Dept. of Water Resources
From: Feather River Diverters: Joint Water Districts, Western Canal Water District
Date: February 1, 2000

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protests to the State of California's Junior Water Rights status allowing the building of the State Water Project's Oroville Dam and Reservoir. As a part of the 1969 Joint District Agreement, DWR and the Joint Districts negotiated the temperatures reasonably related to achieving agricultural production within the Joint Water District service area. Paragraph 6 of the 1969 Agreement states in part as follows:

"This Agreement does not relieve state or its officers, agents or employees from liability to or from damages to districts or third parties arising out of failure of State at any time to comply with this Agreement or the diversion schedules or notices given by Joint Manager pursuant hereto or from injuries to crops or production of crops due to reduction of temperature of water available to Districts during any portion of any irrigation season or seasons *as a result of water released from Lake Oroville being colder then water that would have been available in the Feather River for diversion by districts if Oroville Dam had not been constructed.* (italics added) Nothing in this Agreement shall be construed as an admission by State that a reduction in the temperature of water available to the Districts will, in fact, cause injury to crops or production of crops."

See DWR-Joint Board Member Water Districts Agreement of May 27, 1969 at Paragraph 6 on Pages 16 and 17.

The 1985 WCWD - PG&E - DWR Water Diversion Agreement was a successor to the May 27, 1969 DWR - Pacific Water Delivery Agreement. Although the 1985 Agreement does not contain language as specific as paragraph 6 of the Joint District - DWR 1969 Agreement, paragraph 4(c) of the WCWD - PG&E - DWR 1985 Agreement is specific that DWR is not released from liability for colder water temperatures distributed to WCWD; and the crops grown in both service areas are similar. It is critical that irrigation water delivered pursuant to the above contract be released from the Afterbay into the river at a temperature which does not fall below 64°F during the four-week germination stage and/or planting stage for rice and does not fall below 59°F during the maintenance or "tillering" stage for rice (releases under the control of DWR not inclusive of weather). Additionally, at the initial germination or planting stage, it is estimated by the Rice Experiment Station that a combination of ground and water temperature which:

- (1) falls below 50°F will kill the plant;
- (2) falls below 50°F and 55°F will produce very low germination activity causing the plant to damage or die; and
- (3) falls within 55°F to 60°F will cause low yield and seedling production.

During the initial germination stage, the temperature of the top 4-inches of soil inundated with irrigation water is critical. It is not recommended that rice be planted when the combined temperature of water and soil falls below 65°F.

EXHIBIT "A" PG 2 OF 24

To: Director Thomas M. Hannigan
State of California, Dept. of Water Resources
From: Feather River Diverters: Joint Water Districts, Western Canal Water District
Date: February 1, 2000

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During the "tillering" or rice maintenance stage; i.e., single rice plants start to multiply producing additional stands; it is critical that combined water and soil temperature not fall below 59°F.

COLDER WATER RELEASES

Our concerns are generated by the enclosed July 14, 1999 comments from NOAA/NMFS together with the attached fax of the same date from Michelle Simpson to Dave Robinson of the USBR and Zachary Hymanson of DWR. Particularly on page 2 of the fax from Michelle Simpson she makes the following 4 points with regard to the Feather River:

- Manage reservoir releases from June 1 through September 30 with the goal of achieving a daily average water temperature below 60°F in the reach between the Fish Barrier Dam and Robinson Riffle (RM 61.6). During short periods (2-15 days) of high ambient air temperatures, reservoir releases may be managed to maintain daily average water temperatures between 60°F and 65°F at RM 61.6. If water temperatures rise to a daily average of 68°F or greater for two consecutive days, Reclamation/DWR shall immediately notify NMFS to evaluate potential operational modifications necessary to provide cooler temperatures.
- To monitor temperature conditions, the DWR must utilize an automatic temperature recording device in the Feather River at RM 61.6 for steelhead. The device must be capable of recording water temperature at 1 to 2 hour intervals on a 24-hour basis. Water temperature data must be transmitted to NMFS on a weekly basis via facsimile (Gary Stern; Fax 707-578-3435).
- Stability criteria for the volume of flow released to the Low Flow Channel: flows are not decreased more than 15% per day and not more than 2% per hour. When flood releases can be anticipated, efforts shall be made to minimize rapid increases in flow to the low flow channel. When possible flows are not increased more than 100% per day and not more than 10% per hour.
- Continue and expand monitoring within the Feather River to:
 - (1) establish the presence, residence time, immigration, and emigration periods of adult and juvenile steelhead and chinook salmon; and
 - (2) measure temperature and flow conditions year-round. The monitoring program proposal submitted for review and approval by September 1, 1999.

EXHIBIT "A" PG 3 OF 24

To: Director Thomas M. Hannigan
State of California, Dept. of Water Resources
From: Feather River Diverters: Joint Water Districts, Western Canal Water District
Date: February 1, 2000

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Not only are the above comments advocating a violation of the obligatory language of the '69 Agreement with the Joint Water Districts and the spirit of the 1985 Agreement with WCWD; they are betraying an intention of third party public agencies asking DWR to breach the Agreement and to harm water users dependent on agricultural water supplies delivered out of Lake Oroville for the production of rice and other similarly grown crops.

W-08-03

You were aware of this same problem, we believe, in your letter of September 14, 1999 written by Jim Spence, the Chief of the Project Operations Planning Branch for the State Water Project Control Office and addressed to Gary Stern of the National Marine Fisheries Service in Santa Rosa. The same letter written by Spence was directed to Michelle Simpson of NMFS, and Jim White of the State of California Department of Fish and Game. In Mr. Spence's September 14, 1999 letter to Gary Stern of NMFS, he writes in part that:

"As described in the attached comments from the Oroville Field Division to me, assuring substantially colder water conditions in the low-flow channel to a compliance point at "Robinson Riffle" (River Mile 61.6) requires water releases to be colder, or greater, or both. Release of water cold enough to meet the objective will certainly conflict with the 1983 agreement with California Department of Fish and Game for "Operation of the Oroville Division of the State Water Project for Management of Fish and Wildlife." *Such releases of cold water will also conflict with the 1969 water rights settlements with Richvale Irrigation District, Biggs-West Gridley Water District, Butte Water District, and Sutter Extension Water District. Water temperature was an important factor in the design and construction of the Thermalito Afterbay facilities. Operation outside the range of existing written agreements does not seem to me to be a "reasonable measure" involving only minor changes to the project.*

To some extent, large flow increases in the low-flow channel could substitute for colder initial water temperatures, but would then necessitate varying the flow in contradiction to the second basic objective - stability."
See letter of September 14, 1999 from Jim Spence, Chief of Project Operations Planning Branch State Water Project Control Office to Gary Stern of National Marine Fisheries Service.

Colder water temperatures experienced by Joint Water Districts and WCWD service area landowners during the 1999 irrigation season caused reduced rice production yields on a per acre basis, including the following examples:

EXHIBIT "A" PG 4 OF 24

To: Director Thomas M. Hannigan
State of California, Dept. of Water Resources
From: Feather River Diverters: Joint Water Districts, Western Canal Water District
Date: February 1, 2000

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Example #1

Memorandum #1 reviews RID Landowner Gerald "Butch" Mattson taking water from the Afterbay through the Richvale Canal in: 1) a 300 acre field; 2) a 270 acre field; and 3) an 80 acre field together with colored photographs showing dead rice due to cold water temperatures.

Example #2

Memorandum #2 reviews BWGWD Landowner John "Chuck" Adams suffering colder water temperatures at the intake channel off of the Biggs-West Gridley Canal together with a map which shows dead rice in a 146 acre field consisting of 25 acres in #1 and #2.

Example #3

Memorandum #3 reviews cold water temperatures in the 1999 irrigation season incurred by WCWD Landowner LaMalfa Farms causing reduced yield and rice crop damage.

Example #4

Memorandum #4 reviews RID and BWGWD Landowner James Sligar in suffering reduced rice crop yield due to colder water temperatures.

Example #5

Memorandum #5 reviews RID Landowner Lyle Job suffering cold water temperature damage to approximately 150 acres in 1999 causing reduced yields and crop damage.

Example #6

Memorandum #6 is a map which reviews WCWD and RID Landowner Gary Lindberg with cold water temperatures suffering reduced crop yields in both the east and west side of a 314 acre field divided into three sections.

Example #7

Memorandum #7 is a 1999 graph showing the difference between Thermalito Feather River Hatchery water deliveries and Afterbay Outlet water temperatures from February 28, 1999 through September 26, 1999. The temperature difference on 6/28/99 is 16 degrees; i.e., 54 degrees @ the Hatchery and 70 degrees @ the Afterbay Outlet.

Example #8

Memorandum #8 is a twenty (20) year graph supplied by the DWR Oroville Field Division which identifies the trend toward colder water released from Lake Oroville (commencing January 1980 through January 2000). A more dramatic drop in water temperatures started in January 1993.

EXHIBIT "A" PG 5 OF 24

To: Director Thomas M. Hannigan
State of California, Dept. of Water Resources
From: Feather River Diverters: Joint Water Districts, Western Canal Water District
Date: February 1, 2000

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We urge you to deliver a written communication to the authors of these memos at NOAA/NMFS and specifically to Michelle Simpson, Dave Robinson and Zachary Hymanson of the respective USBR and DWR Offices requesting that they assist DWR in ensuring that water temperatures delivered to both the Joint Water District Members and WCWD service areas are delivered and distributed in reasonable compliance with the water temperature level set forth in this letter pursuant to the obligations expressed in the Joint Water District 1969 Agreement and the Western Canal Water District 1985 Agreement with DWR. May we please have your response within the next twenty (20) business days which will adequately precede the commencement of the year 2000 irrigation season. Thank you and we trust that we may have your written consent and position on this subject.

Very truly yours,

FEATHER RIVER DIVERTERS

JOINT WATER DISTRICTS

Richvale Irrigation District

By: Gene Harris
Gene Harris - President

Sutter Extension Water District

By: Ronald Harrington
Ronald Harrington - Chairman

Biggs-West Gridley Water District

By: Ralph R. Cassady
Ralph R. Cassady - President

WESTERN CANAL WATER DIST.

By: Matt Colwell (MANAGER)
FOR: Lance Tennis - President

Butte Water District

By: Gregg Correa
Gregg Correa - Vice President

Enclosures

cc: National Oceanic and Atmospheric Administration
National Marine Fisheries Service
California Department of Fish and Game
United States Fish and Wildlife Service

MEMORANDUM - EXAMPLE #1

TO: FILE

FROM: WHB

DATE: January 10, 2000

RE: Butch Mattson - Proposed letter to DWR - Cold Water Temperatures

I conferred with Gerald "Butch" Mattson this morning and reviewed his "not to scale" draft diagram of taking water from the Afterbay through the Richvale Canal and then southerly to first, his intake at a 300-acre field and then to his intake at a 270-acre field. His third field takes water out of the Western Supply Ditch on the south side of Richvale Hwy. to an intake channel to his 80-acre field where he has a 2-3 acre leveed warming ditch.

The 80-acre field takes about 2-3 hours to run water through the warming pond which is at the southeast corner of the field and takes water right out of the intake channel from the Western Supply Ditch at approximately 56° - 58°. The warming pond probably takes 5° - 8° off the cold water temperature and grows rice but does not produce any rice for the entire 2 - 3 acres. Butch says he started the pond 6 - 7 years ago in an attempt to control colder water temperatures coming out the Afterbay. His yield average in 1999 on the 80-acre field was 106 sacks green and 94 dry with no rice harvested on the 2 - 3 acre warming pond area.

Butch's second field is the 300-acre field which has a 5 - 6 acre warming pond built in approximately 1995 to control cold water. Rice was planted but now growth in the entire 5 - 6 acres and water coming from the intake channel is estimated at 58° and warmed to approximately 66° in the 5 - 6 acres before applied on the balance of the 300-acre growing area. In 1999 rice yields were 86.5-acres dry with rice planted but killed on the entirety of the 5 - 6 acres.

The third 270-acre field has no leveed warming pond because the landlord (Wehas Farms) said the levee area produces weeds which encroaches on rice production in other areas so the levee was taken down. Still, 5 - 6 acres is planted to rice but grows no rice and the temperature at the intake channel is 58° with another 66° - 67° where it comes out of the 5 - 6 acre into the balance of the field.

I've marked 7 photos taken on December 30, 1999 by Mattson which chronologically show the introduction of water from the Afterbay through the Richvale Canal and into each of the three fields which shows the area of ground tilled by cold water temperatures.

W-08-04

NOT
TO
SCALE



#1 - 12/30/99
Western and
Richvale Canals



#2 - 12/30/99
80-acre field shows levee to control
and warm water: Gerald Mattson

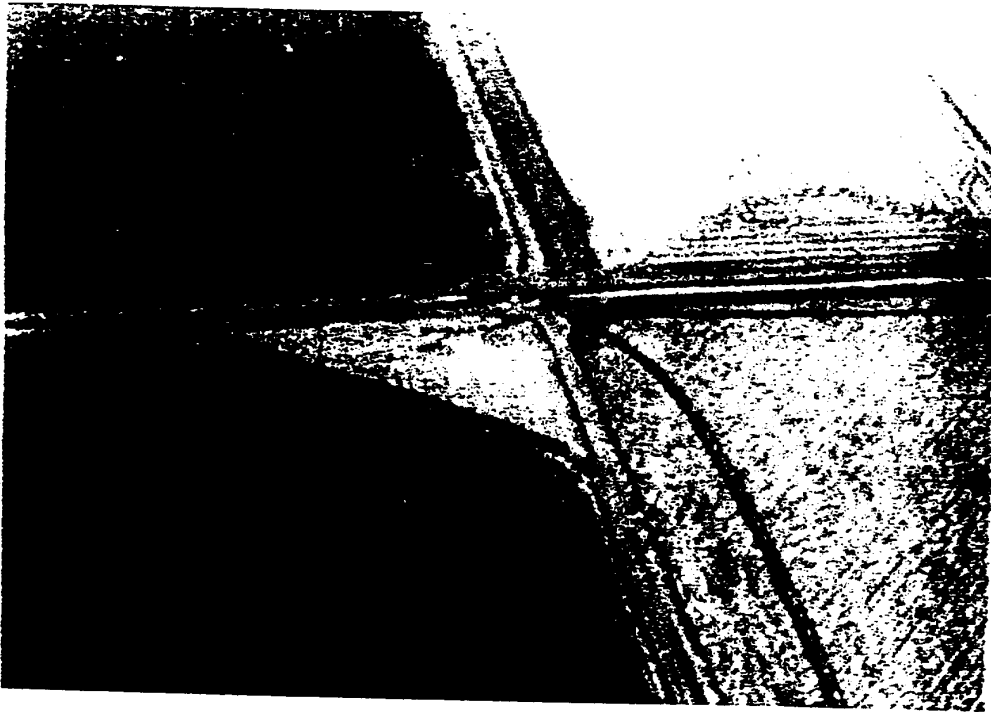




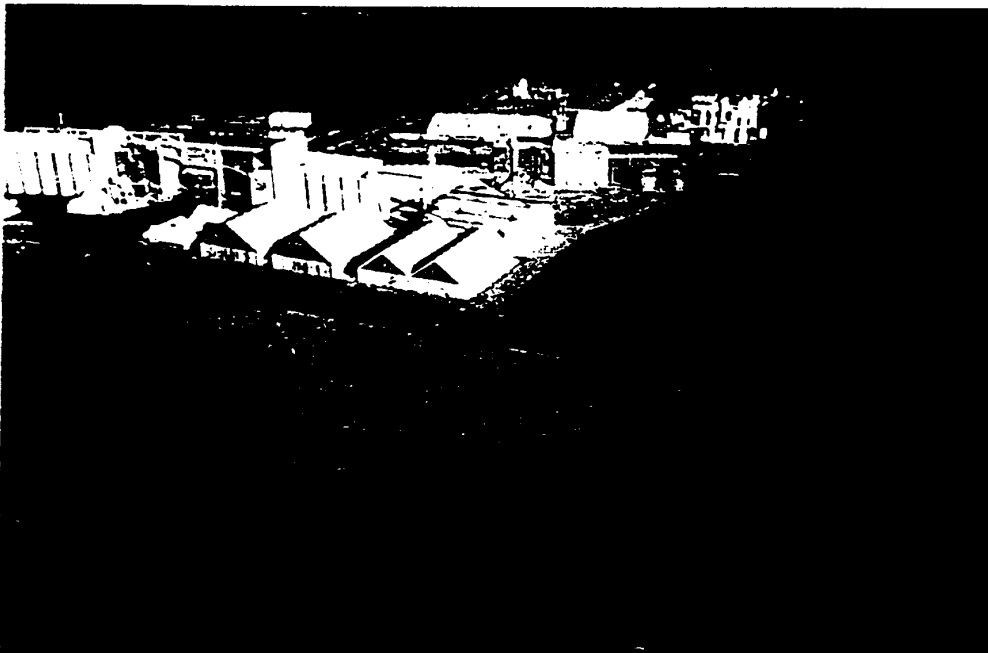
#3 - 12/30/99
Shows 270-acre field with
5-6 acres of dead rice



#4 - 12/30/99
Shows cold water
unharvested rice

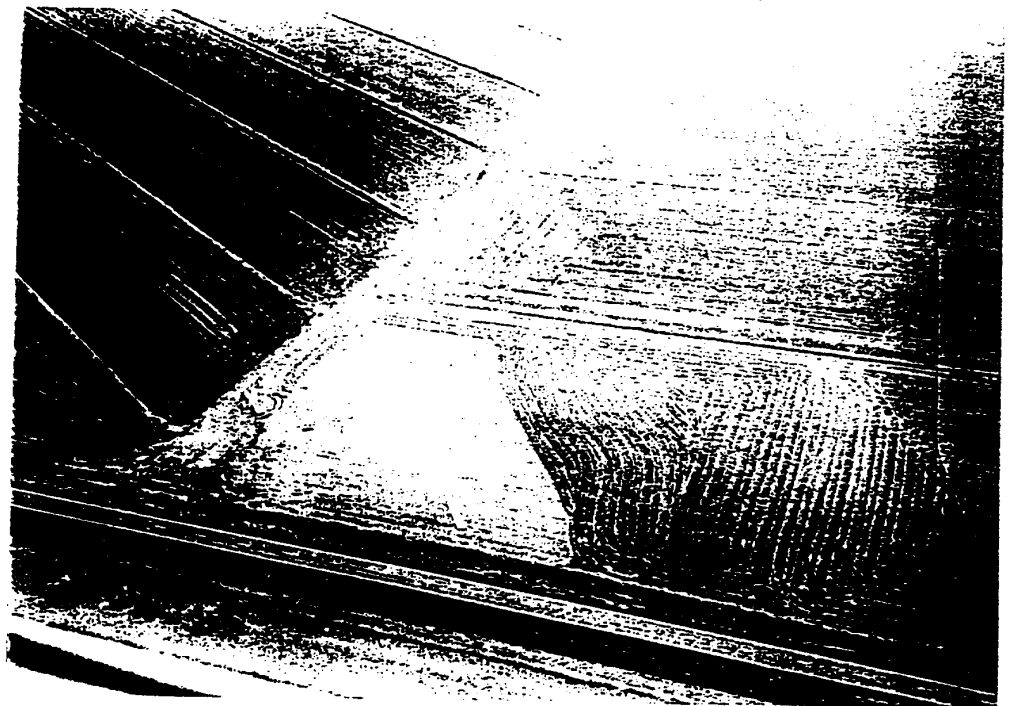


#6 - 12/30/99
Shows cold water
unharvested rice



#5 - 12/30/99
Shows cold water
unharvested rice

#7 - 12/30/99
Shows cold water
unharvested rice



MEMORANDUM - EXAMPLE #2

TO: FILE

FROM: WHB

DATE: January 10, 2000

RE: Chuck Adams - Proposed letter to DWR - Cold Water Temperatures

I reviewed the map and areas 1 and 2 provided me by Chuck Adams through the mail today. They show a 146-acre field looking just westerly of Biggs-West Gridley Road but doesn't provide documentation on the map as to acres in the areas impacted. I called Chuck and he advised as follows:

1. Field #1 is approximately 15-acres and Field #2 is approximately 10-acres. All a part of the 146-acre field.
2. The intake channel on the Biggs-West Gridley Canal is approximately one-quarter mile off of Farris Road. The temperature of the water at the intake channel was always less than 60° at all times of release into the field during the irrigation season.
3. He never constructed ponds.
4. The cold water problem commenced gradually over the last 10-years.

W-08-05

76.5

150.8

Area #1 has zero
yield

Area #2 has 40 cwt
or less yield

SPRINGS ROAD

T1528

NHCL

2.
65.8

T15249

T15734

NHCL

152

T15220

T15732

NHCL

NHCL

5.
12.1

3.
36.2

MEMORANDUM - EXAMPLE #3

TO: FILE

FROM: WHB

DATE: January 20, 2000

RE: Statement of Milton LaMalfa - Proposed letter to DWR - Cold Water Temperatures

1999 RICE CROP YEAR
at LaMalfa Farms

Attached is a map showing LaMalfa Farms Rice Fields located north of Richvale Hwy. West and on the west side of Hwy. 99. The Afterbay is directly across from us on the east side of Hwy 99. The outlet from the Afterbay for Western Canal and Richvale Canal is also across from our farm. Our field deliveries are the first ones on the canals coming from the Afterbay.

When the Afterbay was built we were told it was a warming pond and in the DWR negotiations and contracts. We would be delivered water at least the same temperature as we had been receiving from the Feather River in the past and could even be warmer.

The first year water was delivered from the Afterbay we noticed several acres of rice blanked out at each inlet off the canal due to cold water. Other farmers down the canal all had the same problems. Complaints were made but did not help much so in the following years we established our own warming ponds sizing them to match the areas that the rice blanked out.

These areas are indicated by the light green color on the attached map. The size of each area is determined by the volume of water needed to irrigate the fields. We stopped putting seed, fertilizer and chemicals in these areas because of zero yield to pay for them. But we still pay land payments, insurance, county taxes and water on these areas with no return. Within these warming ponds we put dykes in to make the water circulate or zig zag - giving it more time to be warmed by the sun during the day (not much help at night). The attached map is not to scale but I will give you the measured sizes indicated by the green color.

Field #4 and #40 - 3 acres. Field #1 - 5.7 acres. Field #142 - 3 acres. Field #66 - 2.5 acres. Field # 50 - 2.5 acres. Field #10 - 3 acres. Field #30 - 1.5 acres. Field #48 - 2.5 acres.

This year the rice blanked out past our warming ponds indicated by the pink areas on the map. The blanked out areas were larger than the warming areas. We found out that the water temperature was 5° colder than in the past. Last year we noticed some blanking outside the warming ponds but not as severe. Here are the blanked acreage (not pink area) by field. Field #4

W-08-06

and Field #40 - 6 acres. Field #1 - 7 acres. Field #142 - 8 acres. Field #66 - 6 acres.
Field #50 - 5 acres. Field #10 - 8 acres. Field #30 - 4 acres. Field #48 - 9 acres.

W-08-06

Our production costs for these acres are \$300 to \$350 per acre depending on weed control problems (weeds are harder to control in colder water). These costs bring us to harvest. Now we have no harvest - having drying and storage costs in those spots but we still have to come back and chop the straw and incorporate it into the soil and flood to decompose the straw since burning straw is almost gone. This decomposition cost is \$45 per acre.

53 acres loss x \$350 per acre = \$18,550.00

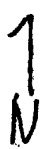
53 acres straw decomposition = 2,385.00

This is 53 more acres not paying taxes, insurance and mortgage payments. The insurance costs for owning this farm and farming is \$22.63 per acre. Our Butte County Taxes on this farm cost is \$30.90 per acre.

There are more farms down the canal that can show the same information as I have here.

LAMALFA FARMS 1999

WESTERN CANAL



CHEROKEE DRAIN

#49

#48

#60

#44

#30

#10

#50

#66

#11

RICHVALE CANAL

AFTER DRAIN
OUT LETS FOR
WESTERN CANAL
RICHVALE CANAL

#142

#3

#2

#1

#13

#6

#5

#40

#100

#4

9881

RICHVALE HWY

EXHIBIT "A" m17 & 14 Hwy 162 ET

MEMORANDUM - EXAMPLE #4

TO: FILE
FROM: WHB
DATE: January 21, 2000
RE: Statement of James J. Sligar - Proposed letter to DWR - Cold Water Temperatures

I have been farming rice in the Biggs-West Gridley and Richvale Irrigation Districts portion of Butte County since 1973.

Over the course of these years I have always experienced some minor problems with "cold water intake checks," associated with the temperature of the water being delivered by the aforementioned water districts, these problems were usually confined to the top 2% of the field. But starting a few years back the temperature of the water delivered by the districts has dropped considerably thereby drastically increasing the problems associated with cold water intakes; i.e., poor seedling germination, poor seeding vigor, reduced tillering resulting in poor stand establishment and increased blanking associated with colder day and nighttime relative temperatures in the effected areas.

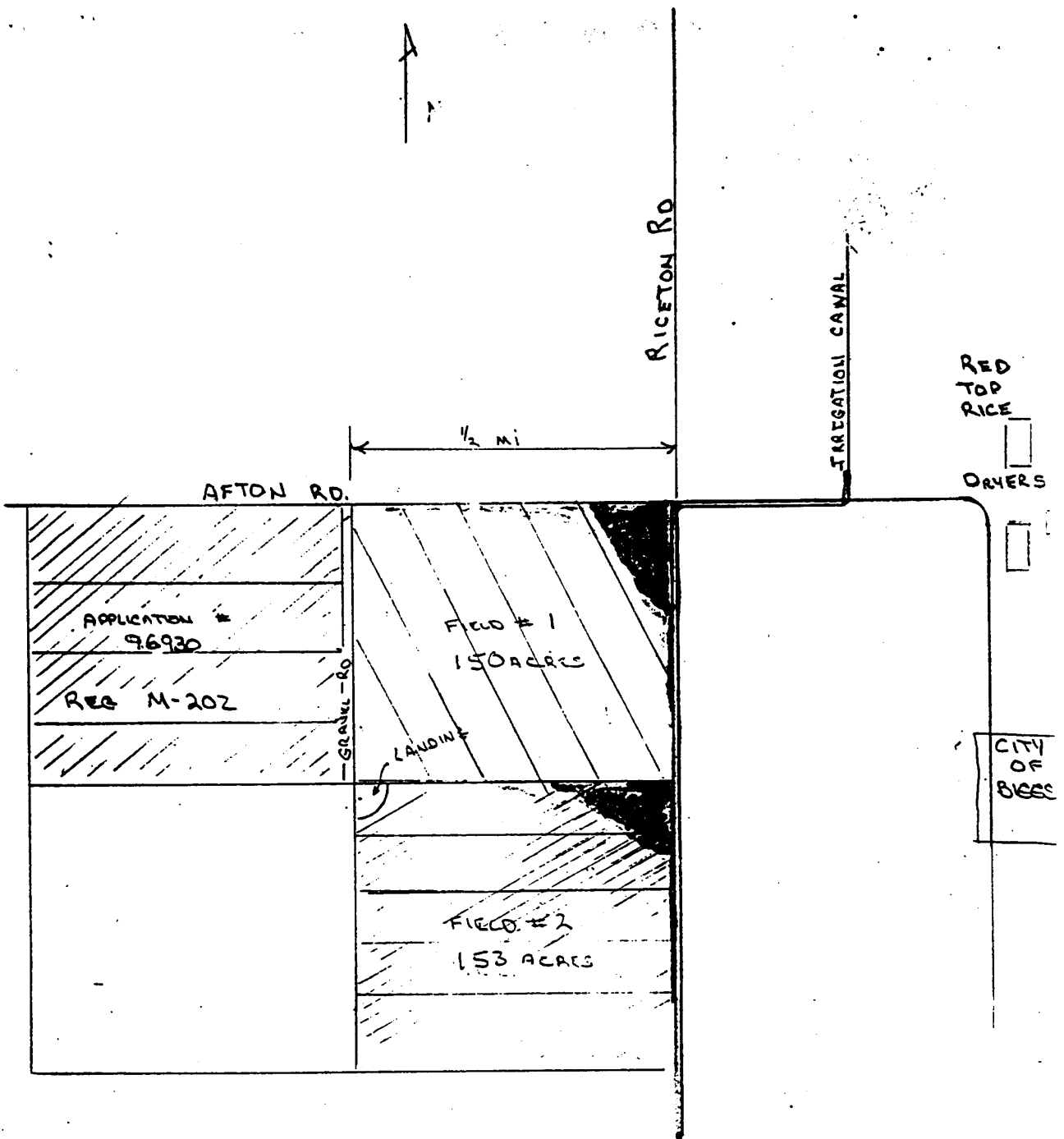
Now, the effected cold water areas instead of being confined to 2% of the field have grown to approximately 15-18% of the field in fields located in the top end of the water districts.

As an example my "overall" average yield for 1999 was 87.9 cwt/acre. But yields in fields planted at the top end of the district which experience my worst cold water effects were 80.1 cwt/ac. for field #1 Exhibit "A" and 79.5 cwt/ac. for field #2 Exhibit "A." These yields are 8 cwt/ac. below my average yields and 15-18 cwt below fields which experience no cold water intake effects.

Since both fields are 150-acres in size, this represents a minimum 2,400 cwt less rice to sell or approximately \$24,000 less income.

I think it is imperative that the State live by its previous contract commitments and deliver rice growers water at temperatures previously agreed to.

W-08-07



EXAMPLE #5

COLD WATER DAMAGE

1999 Rice Crop on L & L Farms

prepared by Lyle Job

I farm three separate parcels in the Richvale Irrigation District which receive irrigation water under different applications. I will explain each parcel and how it is affected by cold water delivery.

Parcel 226: Contains 22.6 acres of farmable rice acres which receives its water from a district lateral and a required bottom gate (producing colder water compared to a top of ditch service). Yield on this parcel for 1999 was 34.68 cwt. per acre of M401 rice. This parcel is farmed, planted, and harvested under all the same time frame as parcel 406 which borders parcel 226 on the east side.

Parcel 406: Contains 40.6 acres of farmable rice acres which receives its water from a private lateral and is a shallow ditch approximately 1/2 mile in length providing a surface service and an area for warming. Yield on this parcel for 1999 was 73.99 cwt. per acre of M401 rice. As stated above this parcel is farmed under the same time frame as parcel 226 yet producing 39.31 cwt. per acre more in yield.

Parcel 82: Contains 82 acres of farmable rice acres which receives its water from a district lateral five miles west of parcels 226 and 406. Therefore allowing warming to occur in the ditch before reaching the parcel's water delivery point. Yield for 1999 was 85.76 cwt. per acre of M204 rice. This parcel was a different variety but Rice Research Station data shows comparable yields in adjoining test plots.

Attached is map showing the location of parcels 226 and 406 in relationship to the main canal and each other. As stated above there were no differences in farming practices, fertilizer application, irrigation levels, planting dates, chemical applications, draining dates, harvest conditions and dates, and drying/storage practices.

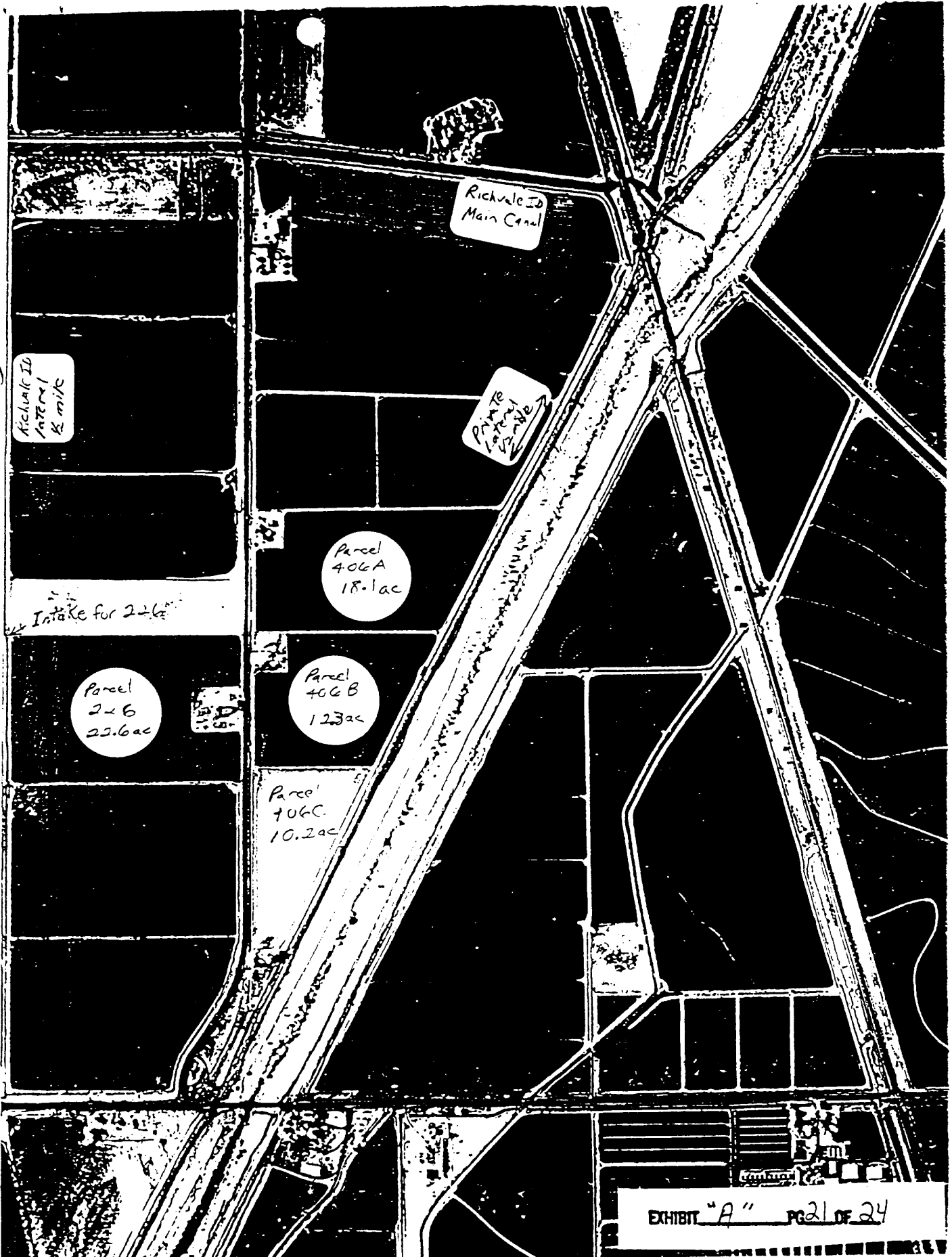
The intake area(approx. 2 acres) of parcel 226 was totally blanked and was unharvestable. The remaining acres had approximately 50% blanking and harvest moistures where higher due to immature kernels. Also attached are paddy rice confirmations showing those moistures and yield data.

I have personally communicated with 10 other growers that are willing to provide data of the same degree as I have submitted so in my opinion this not an isolated problems. I did not include financial data as we market our rice over the next year and final returns will not be available until January of 2001. Estimated financial losses could be provided if litigation starts before that time.

Sincerely,

Lyle Job

W-08-08



EXAMPLE #6

G2L Farms (Gary Lindberg)

Field 314 - Grell

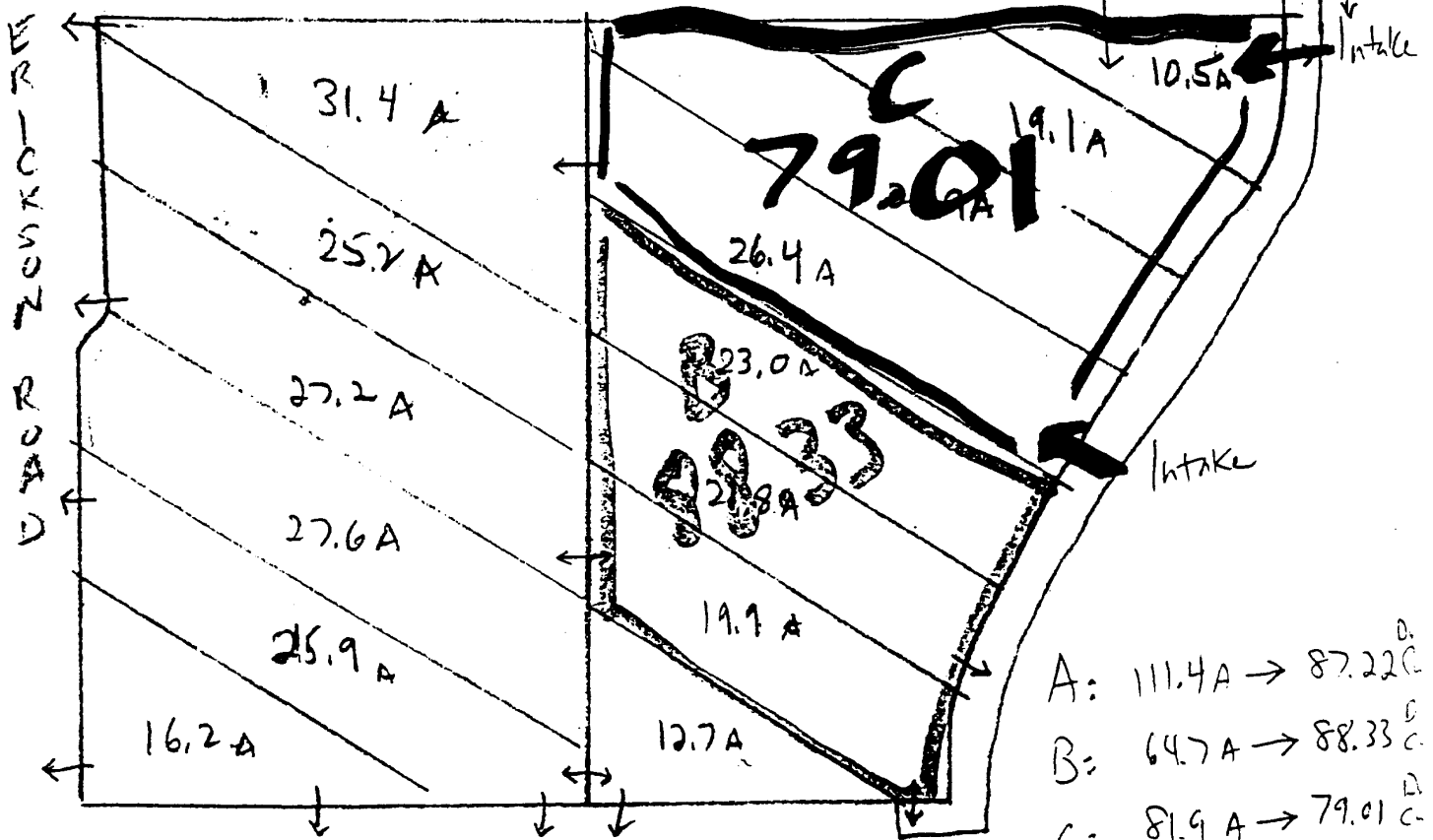
312.8 A Farmable

↔ Intake/Drain
← Drain

WESTERN CANAL 549L

(N)

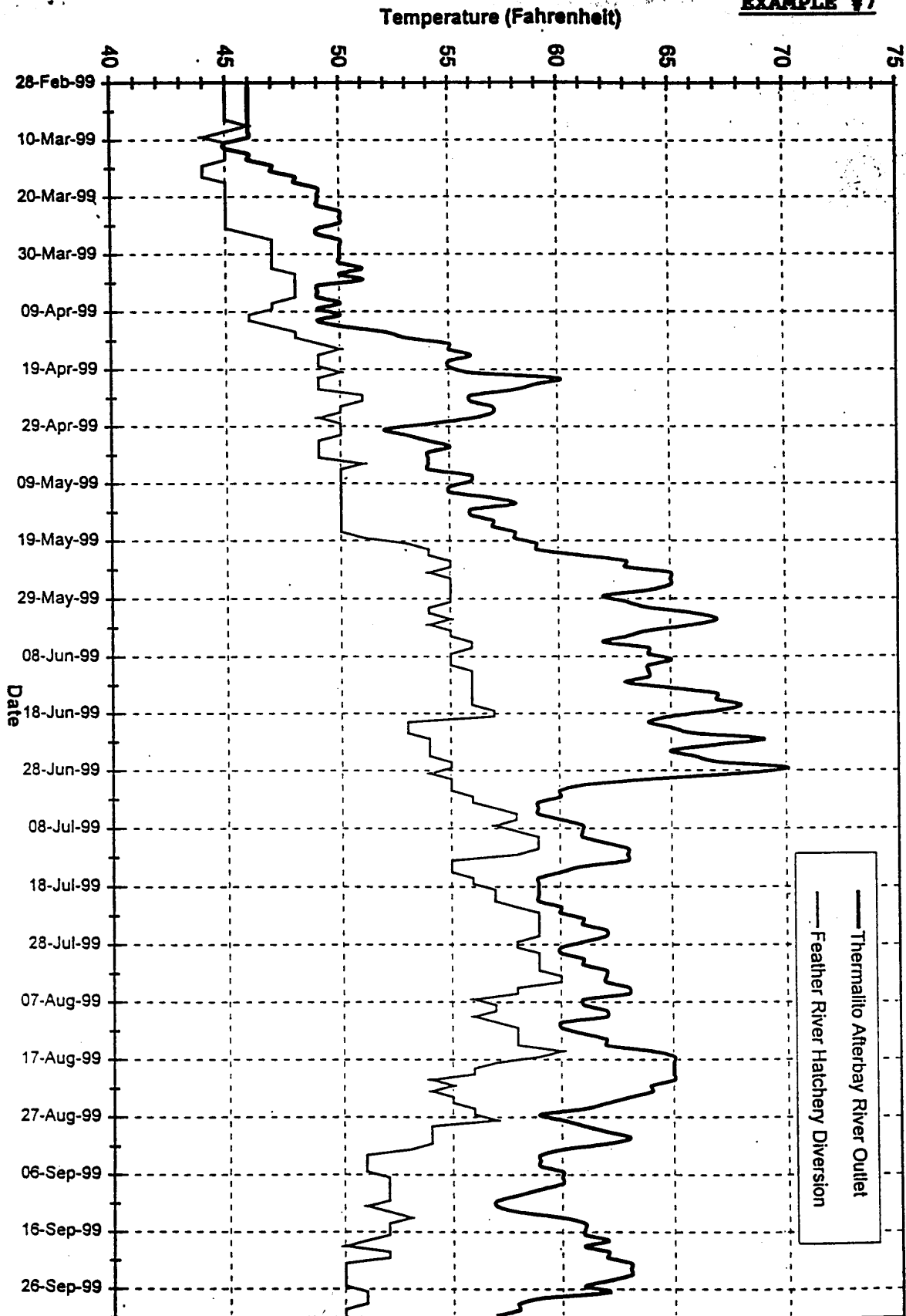
10.5A Intake
Check yielded
55.11 green & 25.9% moisture



153.5 A (West Side)

159.3 A (East Side)

Oroville Complex Temperatures



Average Monthly Feather River Outlet Water Temperature

Data Supplied By:
California Department Of Water Resources
Orville Field Division

■ Average Temperature
— Linear Trendline

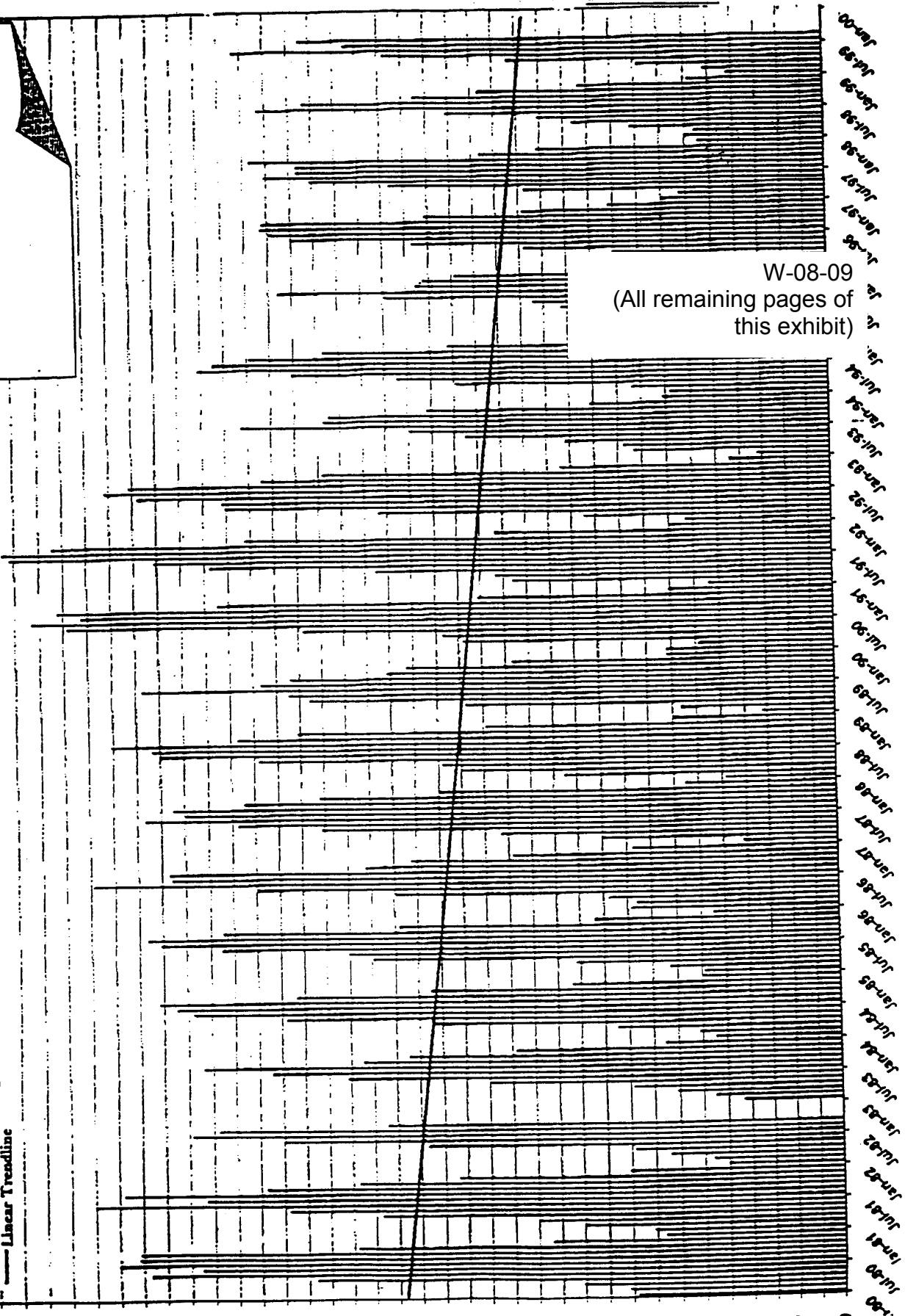


Exhibit B

FEATHER RIVER DIVERTERS

JOINT WATER DISTRICTS

735 Virginia Street
Gridley, California 95948
Telephone: (530) 846-3307

WESTERN CANAL WATER DISTRICT

P.O. Box 190
Richvale, California 95974
Telephone: (530) 342-5083

Representing:

Richvale Irrigation District
Biggs-West Gridley Water District
Butte Water District
Sutter Extension Water District

March 21, 2000

Director Thomas M. Hannigan
State of California
Department of Water Resources
1416 Ninth Street
P.O. Box 942836
Sacramento, CA 94236-0001

Re: DWR Obligations to Deliver Water from Thermalito Afterbay at
Temperatures Suitable for Agriculture

Dear Director Hannigan:

We wrote you a letter dated February 1, 2000 regarding the above DWR obligation to deliver water from Thermalito Afterbay at temperatures suitable for agriculture. We have not as yet had your response and the year 2000 irrigation season is fast approaching.

During the interim period of time between February 1 and the date of this letter, and during our ongoing preparation for what we presume will be the commencement of Phase 8 of the Bay-Delta Hearings sometime later this year, we discovered the enclosed 14-page brochure produced by DWR entitled "Temperature Control of Water From Oroville Reservoir." The brochure was apparently developed and released during Governor Edmund G. "Pat" Brown's term as Governor of California and your predecessor, Bill Warnes's term as DWR Director. Both men presided during the building of Oroville Dam and reservoir in the early 60's.

A reading of the enclosed brochure produced at the time of building Oroville Dam and reservoir fairly supports the reasoning we submitted to you in our letter of February 1. For example, page 5 states:

"The California Department of Water Resources has studied the potentially detrimental effects of cold water releases from the depths of Oroville reservoir upon local crops, fisheries, and recreation.

To: Director Thomas M. Hannigan
State of California, Dept. of Water Resources
Re: DWR Obligations to Deliver Water from Thermalito Afterbay
at Temperatures Suitable for Agriculture
Date: March 21, 2000

Page 2

Concluding that a means must be found to control the temperature of releases from Oroville reservoir so as to meet the diverse needs of a cold-water and a warmwater fishery, of rice growers, and of swimmers, snorklers, and water skiers, the Department set about to find that means.

This booklet describes the problems involved and reports on the solution discovered." See Page 5 of "Temperature Control of Water From Oroville Reservoir" produced by the Department of Water Resources in the early 60's.

With respect to the impacts of "cold water" on the Feather River Fishery, the enclosed report states:

"In the past, rivers and streams near Oroville have been considerably warmer. They have averaged from 52°F on May 1 to 72°F in August. The existing fishery has flourished in these warmer waters. The Department of Water Resources intends to see that cold water releases from Oroville reservoir do not harm that fishery." See Page 7 of "Temperature Control of Water From Oroville Reservoir" produced by the Department of Water Resources.

With respect to the subject of fish, the enclosed states:

"The Feather River abounds in warmwater gamefish: striped bass, largemouth and smallmouth bass, shad, and catfish. During their growing season -- April through October -- these fish thrive best in waters averaging 60° to 75°F." See Page 9 of "Temperature Control of Water From Oroville Reservoir" produced by the Department of Water Resources in the early 60's.

With regard to agricultural production of rice by a number of landowners within our Districts, the enclosed report states in part:

"The fields of the Feather River Service Area will be irrigated by releases from Oroville reservoir. Rice production is important to the economy here; and irrigation water temperature is a critical factor in rice growth.

Cold water released from the depths of Oroville reservoir would harm the rice crop. Even without Oroville Dam, water temperatures of the Feather River are not ideal for rice growth. Their average May through August range has been from 52° to 72°F.

EXHIBIT "B" PG 2 OF 17

To: Director Thomas M. Hannigan
State of California, Dept. of Water Resources
Re: DWR Obligations to Deliver Water from Thermalito Afterbay
at Temperatures Suitable for Agriculture
Date: March 21, 2000

Page 3

The University of California has demonstrated that rice plants thrive best when the temperature of irrigating waters ranges from 59° to 77°F. Even within this critical range, temperature fluctuation drastically affects the harvest.

With a proper outlet structure at Oroville Dam, the temperature of releases can be controlled so as to serve the agricultural interests of the area." See Page 11 and Page 12 of "Temperature Control of Water From Oroville Reservoir" produced by the Department of Water Resources in the early 60's.

Again, Director Hannigan, we urge you to deliver a written communication to the authors of the memos sent you which we identify in our letter to you of February 1, 2000. Please advise NOAA/NMFS, USBR, USFWS and DFG to assist DWR in ensuring that water temperatures delivered to both the Joint Water District Members and WCWD Service Areas are delivered and distributed in reasonable compliance with the water temperature level set forth not only in our letter to you of February 1 but also in your own enclosed document entitled "Temperature Control of Water From Oroville Reservoir." We understand the press of business at DWR but we would appreciate a response within the next ten (10) business days so that we may know of DWR's position on this critically important subject in accord with our 1969 and 1985 Agreements and prior to the start of the year 2000 irrigation season.

Very truly yours,

FEATHER RIVER DIVERTERS

JOINT WATER DISTRICTS

Richvale Irrigation District

By: 

Gene Harris - President

Sutter Extension Water District

By: 

Ronald Harrington - Chairman

Biggs-West Gridley Water District

By: 

Ralph R. Cassady - President

WESTERN CANAL WATER DIST.

By: 

Lance Tennis - President

Butte Water District

By: 

Robert Waller - President

Enclosure

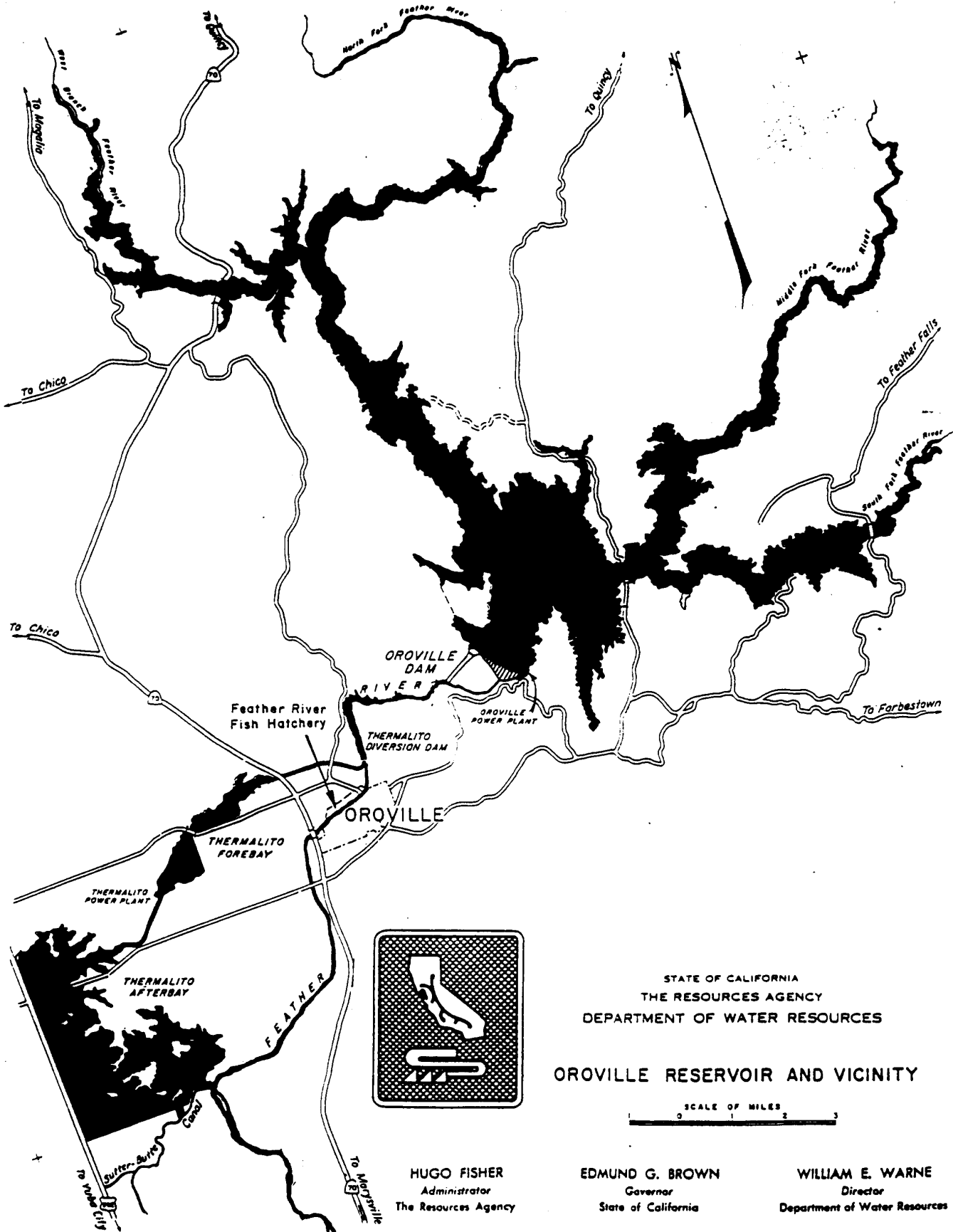
cc: National Oceanic and Atmospheric Administration
National Marine Fisheries Service
California Department of Fish and Game
United States Fish and Wildlife Service

EXHIBIT "B" PG 3 OF 17

TEMPERATURE CONTROL OF WATER FROM OROVILLE RESERVOIR



"B" 4 17



STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

OROVILLE RESERVOIR AND VICINITY

SCALE OF MILES
0 1 2 3

HUGO FISHER
Administrator
The Resources Agency

EDMUND G. BROWN
Governor
State of California

WILLIAM E. WARNE
Director
Department of Water Resources

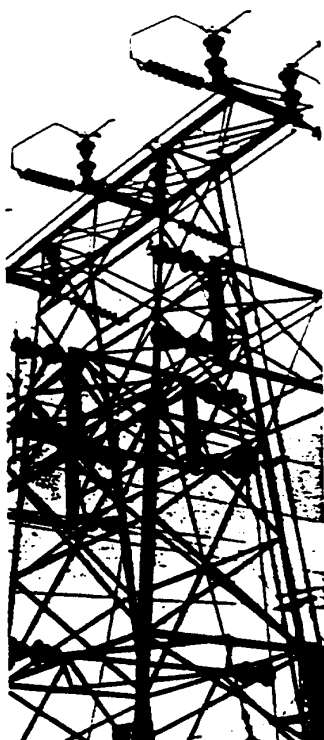
THE
WATER
TEMPERATURE
PROBLEM

A key feature of the State Water Project is Oroville Dam, the highest earthfill dam in the world. Located a few miles above Oroville on the Feather River, this great dam will control floods, will produce power at both Oroville and Thermalito Power Plants, and will provide water to meet the needs of Californians.

Among these needs are water for fisheries, for crops, and for recreation.

One of the complex problems of big reservoirs, such as that which will rise behind Oroville Dam, is the control of the temperature of their released water. Locally, releases of very cold water can harm the fishery, can retard the growth of irrigated crops, and can discourage water sports.

Cold water releases can harm the fishery, retard irrigated crops, and discourage water sports. Flood control and power production remain unaffected by water temperature.



FISH,

RICE, AND

SNORKLE

The California Department of Water Resources has studied the potentially detrimental effects of cold water releases from the depths of Oroville reservoir upon local crops, fisheries, and recreation.

Concluding that a means must be found to control the temperature of releases from Oroville reservoir so as to meet the diverse needs of a cold-water and a warmwater fishery, of rice growers, and of swimmers, snorklers, and water skiers, the Department set about to find that means.

This booklet describes the problems involved and reports on the solution discovered.



"B" 9.17

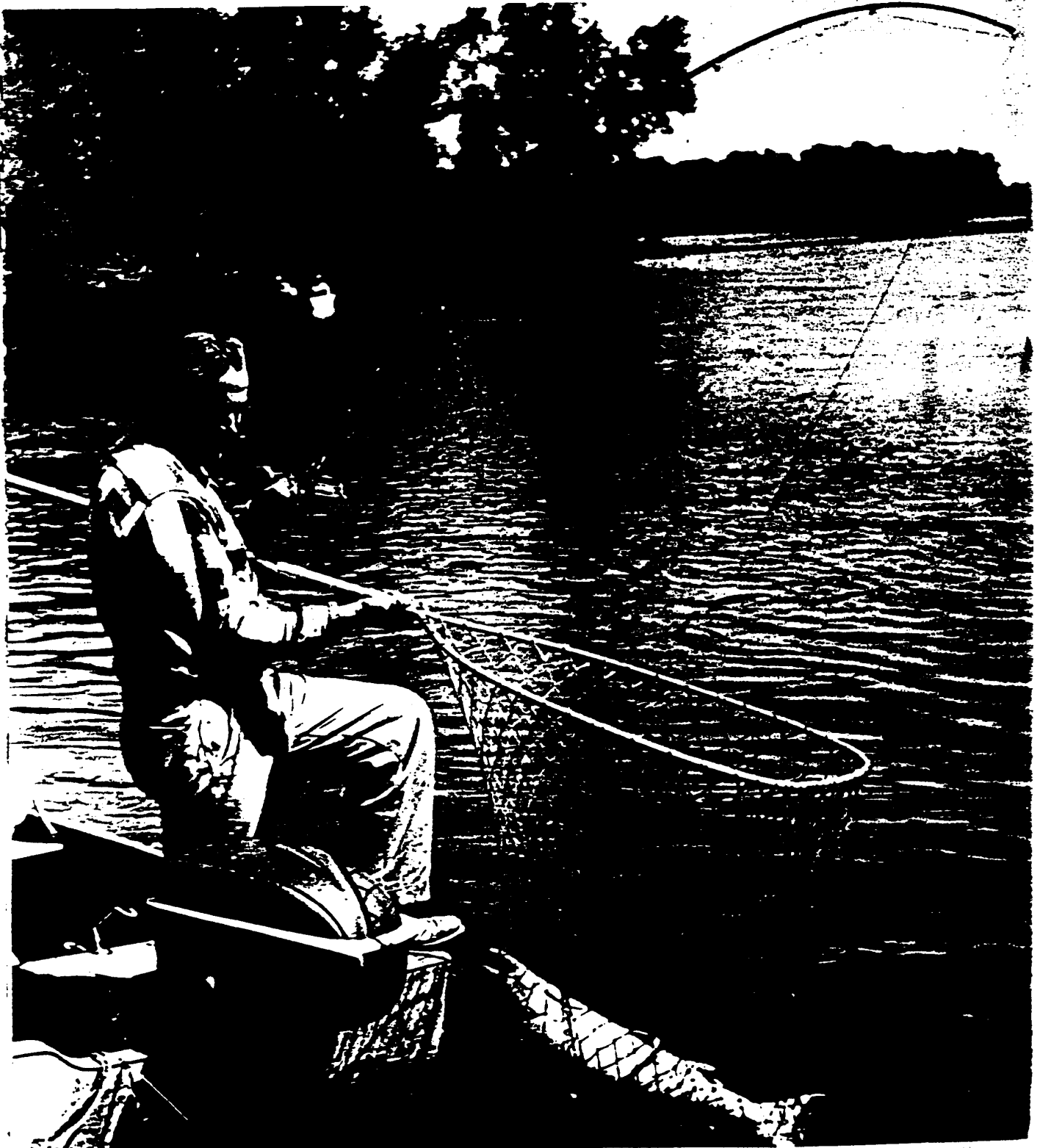
COLD WATER

The reservoir behind Oroville Dam will have a maximum water surface area of 15,500 acres and a maximum depth of 700 feet. Stored at such depths, the water of melting snows and winter floods stays cold indefinitely. If the outlet structure releases water only from these depths, the temperature of the released water in May would be about 42°F.

In the past, rivers and streams near Oroville have been considerably warmer. They have averaged from 52°F on May 1 to 72°F in August. The existing fishery has flourished in these warmer waters. The Department of Water Resources intends to see that cold water releases from Oroville reservoir do not harm that fishery.

"B" 11 17

Spring run salmon fishing



FISH

The Feather River abounds in warmwater gamefish: striped bass, largemouth and smallmouth bass, shad, and catfish. During their growing season -- April through October -- these fish thrive best in waters averaging 60° to 75°F.

Equally important to the river are its spring and fall runs of king salmon. Both runs spawn in the cooler waters of fall, but the spring run salmon, which travel upstream in the spring and early summer, have sought the deep, cool, canyon pools above Oroville dam site. Water that is too warm harms the yet unspawned salmon eggs. In waters of an estimated 60° to 65°F, the spring run salmon rest until their spawning time in late September and in October.

Blocked from these cool pools by Oroville Dam, the salmon would have to hold over in what traditionally have been warmer downstream waters if special provision were not made for their protection. Such provision will be made.

Water released from a single low-level outlet at Oroville Dam would be too cold for hatching salmon eggs and rearing young fish.

The Feather River Fish Hatchery, itself a part of the State Water Project, will lie below the dam.

Apart from a slight but desirable seasonal variation, water temperatures at the hatchery should hold around 55°F.

Unless the temperature of water released from Oroville reservoir is controlled, the Feather River Fish Hatchery cannot operate successfully.



RICE

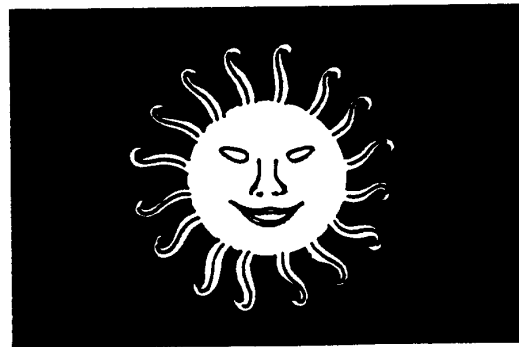
The fields of the Feather River Service Area will be irrigated by releases from Oroville reservoir. Rice production is important to the economy here; and irrigation water temperature is a critical factor in rice growth.

Cold water released from the depths of Oroville reservoir would harm the rice crop. Even without Oroville Dam, water temperatures of the Feather River are not ideal for rice growth. Their average May through August range has been from 52° to 72° F.

The University of California has demonstrated that rice plants thrive best when the temperature of irrigating waters ranges from 59° to 77° F. Even within this critical range, temperature fluctuation drastically affects the harvest.

Thermographs, placed in the Feather River above and below Oroville and in the canals of the Feather River Service Area, have provided a comprehensive record of water temperatures.

With a proper outlet structure at Oroville Dam, the temperature of releases can be controlled so as to serve the agricultural interests of the area.



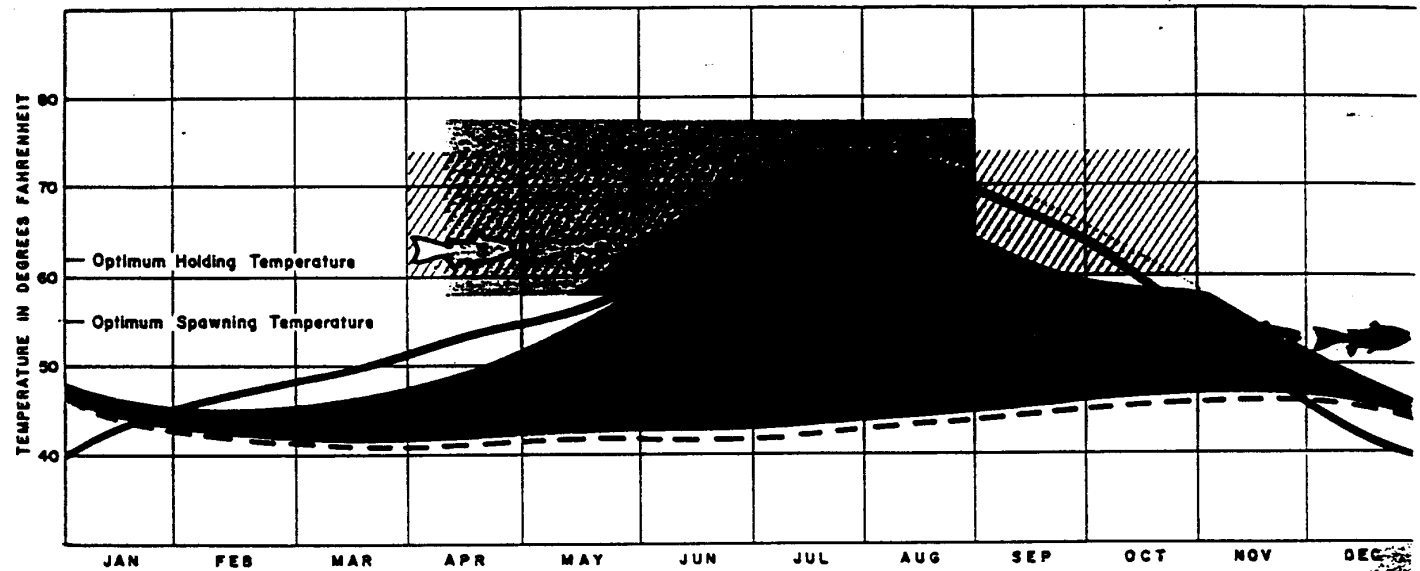
"B" 16. 17

Rice fields



TEMPERATURE RANGE CHART

- FEATHER RIVER (DOWN TO GROVILLE DAM) 10 MILES BELOW DANGOTE
- BOTTOM OF GROVILLE RESERVOIR
- THERMALITO AFTERBAY WARMING EFFECT
- RANGE AVAILABLE FROM GROVILLE RESERVOIR



SALMON

S SPRING RUN

F FALL RUN



HOLDING PERIOD



SPAWNING PERIOD

OPTIMUM WATER TEMPERATURE RANGES



WARMWATER GAME FISH GROWING SEASON



RICE IRRIGATION SEASON

This graph depicts historic average temperatures of Feather River waters and the estimated temperature range of releases from Oroville Reservoir and Thermalito Afterbay. It relates such temperatures to optimum temperature ranges for rice irrigation waters and for the warmwater fishery and to preferred water temperatures for the holding and spawning of salmon.

Self- team

Introduce : Ray Bell, MD Short, Floyd Higgins, -Self
representing the OROVILLE FOUNDATION OF FLIGHT,

affiliated with the Oroville Chapter of the EXPERIMENTAL
AIRCRAFT ASSOCIATION. Your EAA group of citizens.

Our Chapter and Foundation meet monthly and participate in
events as well as learning and teaching various aspects of general
aviation to young and old citizens at our Vinyl Briefing Hut
adjacent to the Golf Course on the Oroville Airport property.
Where the public is always invited and welcome, especially during
our monthly fly-in breakfast's
held on the third Saturday of each month.

Our mission here in the Oroville area is to bring awareness, and
the joy of flight to the young and old alike, and to promote a better
understanding of aviation in general. Along with that we would
like to ask that in the future general aviation will be allowed to
expand and grow, on land as well as on the abundant waterways
we have to offer here around Oroville. Specifically - a year around
base to accomodate Seaplanes at the Afterbay waterway.

To begin with, I would like to bring up a factor that should be
considered in the choosing of a Seaplane base here in Oroville.
Presently, there does not exist any Seaplane base between San
Francisco and Portland, Oregon. Float planes must refuel at
general boating marinas, mixing with boat traffic, maneuvering
around upright signs and fuel dock pumps, as well as being offered
low octane fuel instead of high octane aircraft fuel. Seaplanes
could contact the local Flight Base Operator by radio while inflight
and arrange for dockside fuel delivery during their flights in and

*Hand to you & back
Exhibit 1
to you*

through this area if we could establish a Seaplane base here at the Oroville afterbay adjacent to our airport.

Over the past three years, during our aircraft events, such as the Starduster biplane Open house fly-in and presenting the B-17 Bomber "The Aluminum Overcast", we have accomodated float planes for the public to enjoy also.

We have found that the site we have chosen is relatively clear of heavy boat traffic, has a relatively low count of wildlife to disturb, and meets all FAA requirements in size, depth, approach and departure pathways.

The addition of a Seaplane facility here in Oroville should bring about about aviation events and encourage the development of float plane activities and public participation in watercraft use and ownership here in Oroville

*M/D has brought a float plane license and float
certificate in in lobby*

Have folder w/ aerial photos

*Comments and requirements taken from
Seaplane Pilot Association web site -
explains environmental impact studies*

*Ferc Project #100
Exhibit C
10/29/01
2/12/04*